

a receiver configured to receive a signal from one or more of the plurality of antennas;

a memory configured to store instructions;

a processor configured to execute the instructions, wherein the instructions cause the processor to:

- send a test transmission signal from a transmitter of the plurality of transmitters via one of the plurality of antennas;
- receive the test transmission signal at the receiver via the one of the plurality of antennas, wherein the one of the plurality of antennas operates on a first polarity during transmission and operates on a second polarity during reception;
- determine a gain of the test transmission signal, wherein the gain comprises a measured energy of a signal at the receiver; and
- in response to determining that the gain is within a threshold range of a reference gain, send an indication that the receiver is operating as expected.

16. The electronic device of claim **15**, wherein the instructions cause the processor to:

- send the plurality of transmission signals from the plurality of transmitters via the plurality of antennas;
- receive the plurality of transmission signals at the receiver via the one of the plurality of antennas;
- determine a strongest coupled transmission signal of the plurality of transmission signals at the receiver; and
- determine the reference gain of the strongest coupled transmission signal between the receiver and the transmitter of the plurality of transmitters.

17. The electronic device of claim **16**, wherein the instructions cause the processor to send the strongest coupled transmission signal from the transmitter and send a second transmission signal of the plurality of transmission signals from a second transmitter of the plurality of transmitters after the transmitter finishes transmitting the strongest coupled transmission signal.

18. The electronic device of claim **16**, wherein each transmitter of the plurality of transmitters is configured to operate on a horizontal polarity, and wherein the receiver is configured to operate on a vertical polarity.

19. The electronic device of claim **16**, wherein the instructions cause the processor to receive each transmission signal of the plurality of transmission signals one at a time at the receiver.

20. The electronic device of claim **15**, wherein the instructions cause the processor to:

- send a second transmission signal from the transmitter via the one of the plurality of antennas;
- receive the second transmission signal from the transmitter and reflected by a first reflector, as a reflected transmission signal, at the receiver via the one of the plurality of antennas;
- determine a second reference gain of the reflected transmission signal;
- send a second test transmission signal from the transmitter via the one of the plurality of antennas;
- receive the second test transmission signal from the transmitter and reflected by a second reflector at the receiver via the one of the plurality of antennas;

determine the gain of the second test transmission signal; and

in response to determining that the gain is within a threshold range of the second reference gain, send the indication that the receiver is operating as expected.

21. A system comprising:

- a radio frequency device comprising:
 - a plurality of transmitter antennas of a plurality of transmitters;
 - a receiver antenna of a receiver;
 - a memory configured to store instructions;
 - a processor configured to execute the instructions, wherein the instructions cause the processor to:
 - send a plurality of transmission signals from the plurality of transmitter antennas;
 - receive the plurality of transmission signals at the receiver antenna;
 - determine a strongest coupled transmission signal of the plurality of transmission signals at the receiver antenna;
 - determine a reference gain of the strongest coupled transmission signal between the receiver antenna and an associated transmitter antenna of an associated transmitter of the plurality of transmitters;
 - send a test transmission signal from the associated transmitter;
 - receive the test transmission signal at the receiver antenna;
 - determine a gain of the test transmission signal, wherein the gain comprises a measured energy of a signal at the receiver antenna; and
 - in response to determining that the gain is within a threshold range of the reference gain, send an indication that the receiver is operating as expected.

22. The system of claim **21**, wherein the plurality of transmitter antennas is configured to operate using a first polarity and the receiver antenna is configured to operate using a second polarity opposite the first polarity.

23. The system of claim **21**, wherein the instructions cause the processor to determine the reference gain during a manufacturing process.

24. (canceled)

25. The system of claim **21**, wherein the plurality of transmission signals at the receiver correspond to a plurality of receiver gain states, and wherein the strongest coupled transmission signal comprises one receiver gain state of the plurality of receiver gain states that shares least number of data points with the plurality of receiver gain states.

26. The system of claim **21**, wherein the instructions cause the processor to send an indication that the receiver, the associated transmitter, or a combination thereof, are operating unexpectedly in response to determining that the gain is greater than or less than the threshold range of the reference gain.

27. The system of claim **21**, wherein the instructions cause the processor to send the strongest coupled transmission signal from the associated transmitter antenna and send a second transmission signal of the plurality of transmission signals from a second transmitter antenna of a second transmitter of the plurality of transmitters after the associated transmitter finishes transmitting the strongest coupled transmission signal.

28. (canceled)

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